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EXAMINER

KHAN, TAHSEEN

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/594,840
Filing Date: May 20, 2008
Appellant(s): YOKOYAMA ET AL.

Michael G. Raucci
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 07/15/2011 appealing from the Office action mailed 10/15/2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application: Sixteen (16) claims were originally submitted for examination. Claims 14-16 are withdrawn. Claims were amended in claims set filed 05/27/2009 by applicants. Rejection of claims 1-13 are being appealed.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being

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maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

JP_2004/071473_A	<i>Kobayashi</i>	03-2004
USPN_5907382	<i>Kajiura</i>	05-1999

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 1-10, 12, and 13 are rejected under 5 U.S.C. 103(a) as obvious over *Kobayashi* JP_2004/071473_A (see Machine English Translation) in view of *Kajiura* USPN 5,907,382.
4. Regarding claims 1-10 and 12-13, *Kobayashi* discloses forming a **pattern** (Title) on a **substrate** whereon the substrate has a wettability variable layer (element 3 in Figures 1-6 and Abstract; corresponds to claimed forming layer (B)). *Kobayashi* further discloses that its wettability variable layer (aka "wettability -- strange -- voltinism -- the layer", element 3 in Figures 1-6; corresponds to claimed forming layer (B)) can be comprised of an organic polysilane, as starting monomers, that are irradiated to form organopolysiloxanes (paragraphs 0028-0032, and 0086). *Kobayashi* also discloses that part of its wettability variable layer (aka "wettability -- strange -- voltinism -- the layer", element 3 in Figures 1-6; corresponds to claimed forming layer (B)) can be **irradiated** by UV light via a **mask** to form high-wettability irradiated portions (element 3A in Figures 4-6) on its layer (Abstract and paragraphs 0016, 0038, 0087). *Kobayashi* additionally discloses **applying a solution** (aka "coating liquid"; element 10 in Figure 4) comprised of a **hydrophilic solvent** (paragraphs 0049, 0055, and 0080), **water** (paragraph 0055), and **polymers** such as **polyanilines** (paragraph 0052) and **polythiophenes** (paragraph 0088) to form a **layer** (element 10' in Figures 4-7) over at least the irradiated portions. Since *Kobayashi* discloses having electrodes and known conductive **oxides** like ITO (paragraph 0068) on its substrate, it would therefore be analogous to the claimed conductive substrate (A). Lastly, *Kobayashi* discloses that its patterned substrate can

be used in **organic devices, organic transistors, organic solar cells, organic electroluminescence devices**, etc. (paragraph 0004).

5. However, *Kobayashi* does not explicitly disclose using radiation to oxidize its starting material of organic polysilanes. Also, *Kobayashi* does not disclose impregnating its wettability variable layer (aka "wettability -- strange -- voltinism -- the layer", element 3 in Figures 1-6; corresponds to claimed forming layer (B)) with its conducting organic polysilanes.

6. *Kajiura* discloses irradiating a polysilane thin film which results in photo-oxidation that produces a polysiloxane thin film that is subsequently placed on a substrate (column 12, lines 43-53). *Kajiura* further discloses impregnating its polysilane thin film layer as well with conductive silane coupling agents (column 15, lines 44-56). *Kajiura* discloses using its substrate and polysilane thin film in applications such as EL displays (column 16, lines 13-29) to provide a transparent conductive substrate having a base with both heat resisting characteristic and optical characteristics. *Kajiura* further discloses that its invention can provide a transparent conductive substrate with a scratch resisting characteristic, an oxygen barrier characteristic, a steam barrier characteristic, and adhesion of a transparent electrode layer; wherein the substrate can be used to provide a small, thin, and light display apparatus having the above-described transparent conductive substrate (column 3, lines 9-20).

7. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process, of *Kobayashi*, by irradiating its organic polysilane starting materials to oxidize them into organic polysiloxanes and to

subsequently impregnate its conductive layer with silanols, as is exemplified by *Kajiura*. One of ordinary skill in the art would have been motivated in doing so in order to obtain the benefits of *Kajiura*'s transparent conductive substrate such as its scratch resisting characteristic, an oxygen barrier characteristic, a steam barrier characteristic, and adhesion of a transparent electrode layer.

8. Alternatively, Regarding claims 1-7, the processes of forming the patterned substrate disclosed in claims 1-7 are not essential to a determination of patentability of the composition disclosed in the claim. The patentability of product-by-process claims is based on the product itself. "[E]ven though product-by-process claims are limited by and defined by the process; determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113. The examiner respectfully submits that none of the limitations claimed in claims 1-7 by applicants impart a structural property in the end product of their claimed patterned substrate. The examiner has shown above that processes utilized by the motivated combination of, *Kobayashi* in view of *Kajiura*, implies all of the nuances of the claimed processes.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Kobayashi* JP_2004/071473_A (see Machine English Translation) in view of *Kajiura*

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USPN 5,907,382, as applied to claim 1, and further in view of *Veres*

WO_2004/013922_A2.

10. Regarding claim 11, *Kobayashi* in view of *Kujiara* suggests that its patterned substrate can be used to form organic devices, organic transistors, organic solar cells, organic electroluminescence devices, etc. (paragraph 0004). However, they does not disclose forming photosensors.

11. *Veres* discloses forming a pattern on a substrate that can be used in organic electronic devices such as organic solar cells and organic photosensors (Abstract).

12. It would have been obvious to one of ordinary skill in the art to use the patterned substrate, of *Kobayashi*, for devices such as photosensors as exemplified by *Veres*.

One of ordinary skill in the art would have been motivated in doing so due to the analogous subject matter as well as the fact that *Veres* uses its patterned substrate in organic solar cells, as does *Kobayashi*.

(10) Response to Argument

The Examiner respectfully submits at the outset that the entirety of Appellant's arguments in the Appeal Brief are in relation to process limitations for making the claimed product of a patterned substrate having a conductor pattern, as recited in independent, claim 1. As is well known, the process limitations themselves are not essential to a determination of patentability of the composition disclosed in the claim. The patentability of product-by-process claims is based on the product itself. "[E]ven though product-by-process claims are limited by and defined by the process; determination of patentability is based on the product itself. The patentability of a

product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113. Therefore, it is in this light that the Examiner will address Appellants' remarks below:

Appellant argues that the primary reference, of *Kobayashi*, does not irradiate a certain region of the claimed layer (“B”) with radiation to "oxidize" the claimed organic polysilane in the certain region. Appellant further argues that this is because *Kobayashi* forms the polysiloxane layer by hydrolytic polycondensation of an organic silicone compound prior to irradiation. Thus, in contrast to Claim 1, *Kobayashi* discloses irradiating a polysiloxane layer.

The Examiner respectfully submits that *Kobayashi* discloses that part of its wettability variable layer [a.k.a. “wettability -- strange -- voltinism -- the layer”, element 3 in Figures 1-6; corresponding to claimed forming layer (B)] can be irradiated by UV light via a mask to form high-wettability irradiated portions (element 3A in Figures 4-6) on its layer (Abstract and paragraphs 0016, 0038, 0087). Give the fact that this limitation in applicants' claims is a product-by-process limitation, the actual step of when the irradiation takes place on the wettability variable layer does not impart a structural property in the end product, as defined in the product claims, since *Kobayashi* still discloses what would result in irradiated portions which fulfills the current claim language limitation. It should be kept in mind that *Kobayashi* also discloses starting off with organic polysilanes but uses the un-claimed process, of hydrolytic

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polycondensation, that finally results in the formation of polysiloxanes on its first layer (paragraphs 0028-0030). As for Appellants' claimed limitation of irradiation taking place in a "certain region", the fact that *Kobayashi* irradiates the entire layer does not preclude it from meeting this specific limitation. Furthermore, it should be noted that the process of irradiating the claimed organic polysilanes will result in the formation of polysiloxanes. Therefore, Appellants' claimed forming layer (B) will inherently have either polysiloxane in its irradiated portions. In other words, Appellants' layer will result in having polysiloxane in its layer according to its *claimed* process limitations, and likewise, *Kobayashi's* layer will result in the formation of polysiloxane on its wettability variable layer [corresponding to claimed forming layer (B)] according to its own process steps. There is no difference in that both layers will have polysiloxane material in a "certain region" in its first layer upon their respective substrates.

Appellants further remark that *Kobayashi* does not disclose impregnating the layer (B) in the certain region (i.e., the irradiated region) with a conducting polymer to electrically connect the formed layer (C) and the substrate (A).

The examiner respectfully submits that *Kobayashi* discloses using polymers such as polyanilines (paragraph 0052) and polythiophenes (paragraph 0088) to form a layer (element 10' in Figures 4-7) over at least the irradiated portions.

Appellants further state that the patterned substrate of the invention recited by Claim 1 has the layer (C) is electrically connected to the substrate (A). And that this point alone distinguishes Claim 1 from *Kobayashi* because *Kobayashi* does not have the wettability variable layer and the substrate electrically connected.

The examiner respectfully submits that *Kobayashi* discloses having electrodes and known conductive oxides like ITO (paragraph 0068) on its substrate, it would therefore be analogous to the claimed conductive substrate (A). Additionally, *Kobayashi* discloses that its patterned substrate can be used in organic devices, organic transistors, organic solar cells, organic electroluminescence devices, etc. (paragraph 0004) all of which necessitate a form of electrical connection between the substrate and its corresponding layers. Thus, it would be obvious that the conductive oxides would make an electrical connection with the layers over it and hence its usage in devices such as electroluminescence devices.

Appellants further state that according to the present claims, only a certain region of the polysilane layer (B) of the present application is irradiated, forming an oxidized (or polysiloxane) portion only in the certain region, while the surrounding region remains polysilane. And that according to both *Kajiura* and *Kobayashi*, the entire layer (B) becomes polysiloxane before any further processing is performed.

Again, the Examiner respectfully submits that any partial oxidation of the claimed organic polysilane would result in the formation of organopolysiloxanes. Given the fact that using radiation to “oxidize the organic polysilane” is a product-by-process limitation in applicants’ independent claim 1; one could reasonably suggest, as per the guidelines concerning product-by-process limitations in the MPEP, that any precursor materials can be used to suggest the product of claim 1 so long as it results in the formation of organopolysiloxanes, since the latter is a resultant of the claimed oxidation of organic polysilanes. Moreover, *Kobayashi* discloses not only the formation of

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organopolysiloxanes, but by also using the claimed material of organic polysilanes albeit a different method, i.e. hydrolytic polycondensation steps. Nevertheless, it therefore suggests the *claimed product* of applicants' independent, claim 1. Also, as mentioned previously, *Kobayashi* discloses forming polysiloxanes throughout the layer, which would still meet the limitation of a "certain region" as per applicants' claimed language in claim 1. Furthermore, *Kobayashi* also discloses that part of its wettability variable layer [aka "wettability -- strange -- voltinism -- the layer", element 3 in Figures 1-6; corresponds to claimed forming layer (B)] can be irradiated by UV light via a mask to form high-wettability irradiated portions (element 3A in Figures 4-6) on its layer (Abstract and paragraphs 0016, 0038, 0087). Thus, it can also be suggested that *Kobayashi* is also disclosing the radiation of certain portions only. Appellants have not described the extent of irradiation of the polysilane material, therefore, it is not known how much polysilane or polysiloxane is in the final patterned substrate product. Keeping this in mind, *Kobayashi's* use of starting monomers of polysilane can also exist, at the very least, in trace amounts after it forms polysiloxanes by way of its hydrolytic polycondensation prior to irradiation. Therefore, when the actual step of irradiation does take place in *Kobayashi*, that polysilane (irrespective of its amount) can also be oxidized, as is being claimed by Appellants in those corresponding irradiated portions. Additionally, it was also shown in the above rejection by way of the secondary reference, of *Kajiura*, that the mere process limitation of irradiating polysilanes for oxidation to occur is something known in the art in the specific context of display devices. And that one of ordinary skill in the art would have been motivated in using

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this process step of irradiating its polysilanes in order to obtain the benefits of *Kajiura's* scratch resistance characteristics, oxygen barrier characteristics, a steam barrier characteristics, etc.

Appellants further argue that the substrate according to Claim 1 differs from the substrate of *Kajiura*. And that one of ordinary skill in the art in possession of the teachings of *Kajiura* would not have thought to electrically connect the layer (C) and the substrate (A) of *Kobayashi*.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The Examiner respectfully submits that *Kobayashi* has clearly discloses the same substrate as that of Appellants', as shown in the above rejection.

Appellants further state that the structure according to Claim 1 has polysilane layer (B) formed on a conductive layer, and *Kajiura* has a polysilane layer formed on a non-conductive layer. And that *Kajiura* cannot realize this type of electrical connection because one layer is conductive while the other is non-conductive.

The Examiner respectfully submits that the secondary reference, of *Kajiura*, was used to show that prior art uses the process steps or irradiating polysilane films upon a substrate in producing polysiloxanes in the context of display device applications. The alleged argument that *Kajiura's* embodiment has a polysilane layer formed on a non-conductive layer is moot because the primary reference, of *Kobayashi*, discloses an

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electrical connection and neither Kobayashi's substrate or that which lies under its wettability layer (corresponding to claimed forming layer (B)) is NOT being modified by *Kajiura*.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/T.N.K./
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October 20, 2011

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